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THE

ONTARIO WATER RESOURCES

COMMISSION

WATER POLLUTION SURVEY

of the

VILLAGE OF FLESHERTON

COUNTY OF GREY

1967

TD
380
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1967
MOE

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Report on a water pollution survey of the village of Flesherton, county of Grey.

80858

R E P O R T

on a

WATER POLLUTION SURVEY

of the

VILLAGE OF FLESHERTON

County of Grey

December - 1967

District Engineers Branch

DIVISION OF SANITARY ENGINEERING

INDEX

SECTION	PAGE NO.
INTRODUCTION	1
GENERAL	1
(1) Location	1
(2) Drainage and Topography	1
WATER USES	1
(1) Domestic Supply	1
(2) Recreational	2
WATER POLLUTION	2
(1) Sanitary Waste Disposal	2
(a) Existing Works	2
(b) Proposed Sewage Works	2
(c) Refuse Disposal Site	3
(d) Industrial Waste Disposal	3
DISCUSSION OF LABORATORY ANALYSES	3
SUMMARY	4
RECOMMENDATIONS	5
APPENDICES	
TABLE	
MAP	

R E P O R T

INTRODUCTION

The purpose of this survey was to locate and record significant sources of water pollution within the Village of Flesherton.

Surveys of this nature are conducted throughout the Province of Ontario and form a basis for evaluating any existing or potential sources of pollution. When sources of pollution are found corrective action is requested by the Commission.

GENERAL

1. Location

The Village of Flesherton is located at the intersection of highways 4 and 10. The population (1967 Municipal Directory) is 480.

2. Drainage and Topography

Drainage is provided by the Boyne River which flows through the northwest section of the village. The Boyne River joins the Beaver River approximately 2 miles downstream from Flesherton. The land generally slopes towards the river. The soil overburden is a mixture of gravel, clay and silt.

WATER USES

1. Domestic Supply

The municipality is served with private water supply systems drawing water from springs and deep wells. Dug wells have generally not provided sufficient water during dry weather and also contamination

of shallow wells has occurred. Most of the drilled wells are artesian and in some instances several premises are served by the same water supply. Overflow from these wells is conducted by open ditches or storm drains to the Boyne River.

2. Recreational

The Boyne River is used extensively for swimming and being part of the Beaver River is a popular trout stream.

WATER POLLUTION

1. Sanitary Waste Disposal

(a) Existing Works

Septic tank and tile field is the most common method of sewage disposal. The provision of private sewage disposal in older premises without inspection has resulted in inadequate systems causing an effluent or ponding of sewage. Since the overflow from artesian wells is directed to the Boyne River via the drainage conduits the resulting dilution of any sewage effluent which may gain access to these water-courses must be considered in assessing the results of the appended laboratory analyses.

(b) Proposed Sewage Works

The Village of Flesherton has requested the Commission to develop a sewage works program under the Provincial method of financing. At the time of the writing of the report the firm of A. M. McKay and Associates Limited had been retained for the preparation of the design

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report on the required sewage works for the entire mu ity.

(c) Refuse Disposal Site

A municipal dump serving the village is located on the south side of Durham Road near the western boundary. The southern end of the dumping area extends to a swamp. During heavy seasonal flow, surplus water from this swamp may flow to a private pond, the overflow from which is directed to the Boyne River. The results of the samples taken from the overflow of the pond (BB-30.5) were satisfactory. However, the isolating of the dumping area by a clay dyke around the perimeter would minimize the possibility of surface water pollution.

(d) Industrial Waste Disposal

The only industry in the village is the Co-Operative Feed Mill. No pollution problems were found to originate from the premises.

DISCUSSION OF LABORATORY ANALYSES

The results of the laboratory analyses and an explanation of their significance are included in the appendices.

Significant impairment was evident at the following locations.

(i) Sampling Point No.	Description
BB-30.66	Tail-race rear of Robinson's property

The appearance and excessive number of coliform organisms in the samples from this location confirm contamination, which appears to originate from malfunctioning septic tank systems at the adjacent Collingwood Street premises.

(ii) Sampling Point No. — Description

BB-30.9-P — Private outfall at Highway 10 Bridge (NW side of Boyne River)

The results of the laboratory analyses show a high coliform concentration, consistent with sewage pollution.

(iii) Sampling Point No. — Description

BB-30.96-D — Storm sewer outlet at Margaret St.

A fairly high coliform concentration was shown in samples obtained on both sampling dates in spite of the fact that overflowing wells provided a high degree of dilution. This suggests that there are significant sources of pollution in this area.

(iv) Sampling Point No. — Description

BB-31.13P — Ditch - south of Supertest Station Highway 10 (North End)

The bacteriological examination of samples at this point shows the presence of domestic sewage.

SUMMARY

A water pollution survey was undertaken in the Village of Flesherton by the Ontario Water Resources Commission. Field investigations were made during the months of July and September, 1967.

The proximity of the municipal refuse disposal site to a swamp south of the dumping area creates a potential water pollution problem. The construction of a clay dyke around the perimeter of the dump would minimize potential surface water impairment.

Contaminating waste is gaining access to the Boyne River and drainage ditches via municipal storm sewers and private connections.

RECOMMENDATIONS

1. The village should continue with its program to provide communal water pollution control facilities .

3. The Village of Flesherton should adopt enforceable regulations to encourage the prompt connection of all offending premises to the forthcoming water pollution control facilities.

Prepared by D. J. Currie

D. J. Currie,
Engineering Technician,
Division of Sanitary Engineering.

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EXPLANATION AND SIGNIFICANCE OF LABORATORY ANALYSES

Bacteriological Examination

Bacteriological examinations were performed on samples from the watercourse. The Membrane Filter technique was used to obtain a direct enumeration of coliform organisms. These organisms are normal inhabitants of the intestines of man and other warm blooded animals. They are always present in sewage and are generally minimal in other pollutants. The results of the examinations are reported as M.F. Coliform count per 100 ml.

The Commission's objective for surface waters in Ontario is a coliform count of not greater than 2,400 organisms per 100 ml.

Chemical Analysis

The chemical analysis performed on stream and outfall samples included determinations for biochemical oxygen demand, suspended solids and in some instances turbidity.

(1) Biochemical Oxygen Demand (BOD)

Biochemical oxygen demand is reported in ppm and is an indication of the amount of oxygen required for stabilization of decomposable organic matter present in sewage, polluted waters or industrial wastes. The completion of the test requires 5 days, under the controlled incubation temperature of 20°C.

The Commission's water quality objectives are (1) for stream water - a 5-day BOD of not greater than 4 ppm. (11) for storm sewer, sewage treatment plant and industrial waste discharges - a 5-day BOD

of not greater than 15 ppm.

(2) Solids

The laboratory does tests to determine the total and suspended solids in a sample. The value for dissolved solids is determined by taking the mathematical difference between the total and suspended solids.

The concentration of suspended solids expressed in parts per million (ppm) is generally the most significant of the solids analyses in regard to stream water and outfall discharge qualities.

The OWRC's objective for discharge is a suspended solids concentration of not greater than 15 ppm.

(3) Turbidity

Turbidity is caused by the presence of suspended matter such as clay, silt, finely divided organic matter, plankton and other microscopic organisms in water or outfall discharges. It is an expression of the optical property of a sample and the results are reported in "Turbidity Units".

VILLAGE OF FLESHERTON

TABLE I (CONTD)

Sample Point	Description	Date	Coliforms per 100 ml	5-Day BOD	Solids (ppm) Total	Susp.	Diss.	Estimated DWF
BB-30.9	Bridge at Hwy.10 (upstream)	July 20/67	70	0.9	270	1	269	
		Sept.20/67	180					
BB-30.92	Boyne R. upstream from Margaret St. outfall.	July 20/67	192	1.2	276	1	275	
BB-30.96D	15" concrete storm at Margaret St.	July 20/67	86,000	2.2	456	1	455	8 gpm
		Sept.20/67	118,000					
BB-30.99D	Drainage ditch near outfall to Mill Pond.	July 20/67	252	0.8	352	3	349	5 gpm
		Sept.20/67	430					
BB-31.0	Boyne R.downstream from Margaret St. outfall.	July 20/67	360	7.1*	284	15	269	
BB-31.13P	Ditch south of Supertest lunch counter at Hwy.10.	July 20/67	81,000					1 gpm
		Sept.20/67	1,800,000					
BB-31.1	Boyne R. at Old Mill Dam.	July 20/67	26,000	0.9	278	1	277	
		Sept.20/67	240					

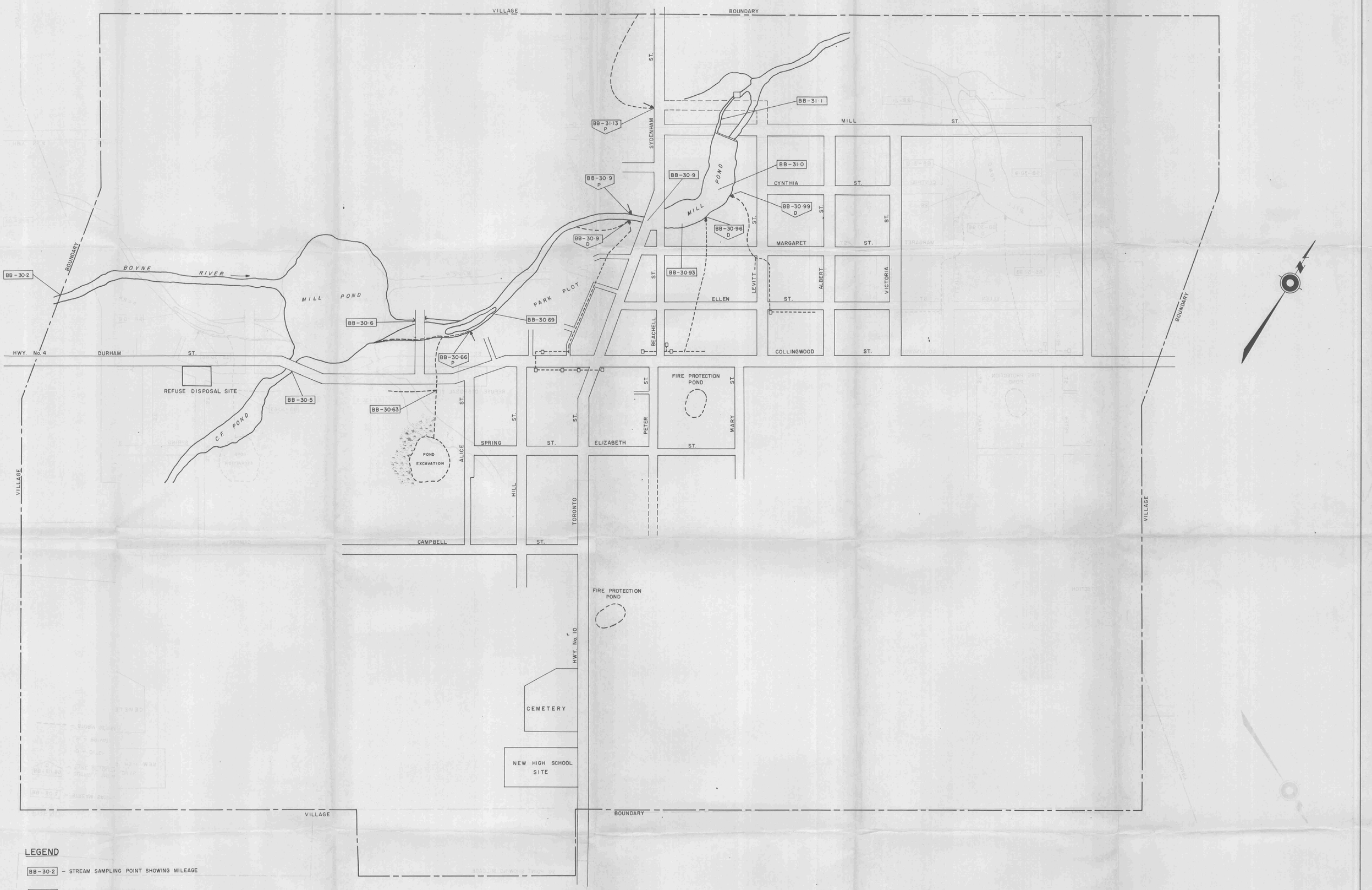
* not considered representative.

VILLAGE OF FLESHERTON

TABLE I

Sample Point	Description	Date	Coliforms per 100 ml	5-Day BOD	Solids (ppm) Total	Susp.	Diss.	Estimated DWF
BB-30.2	Boyne R. at up-stream boundary	July 20/67 Sept.20/67	170 48	1.0	250	1	249	
BB-30.5	Outfall from Factory Plant Road.	July 20/67 Sept.20/67	288 320	1.4	242	1	241	8 gpm
BB-30.6	Boyne R. outfall from swimming area.	July 20/67 Sept.20/67	390 280	1.3	278	1	277	
BB-30.63	Outfall from ex-cavated pond at Collingwood St.	July 20/67 Sept.20/67	2,100 19,000					4 gpm
BB-30.66	Tailrace near Robinson tile bed area.	July 20/67 Sept.20/67	510,000 4,800					
BB-30.69	Tailrace near con-fluence with Boyne R.	July 20/67 Sept.20/67	650 530					
BB-30.9D	15"Ø concrete pipe at Hwy.10 bridge.	July 20/67	No Flow					
BB-30.9P	Private outfall at Hwy.10 (n.w.side) cottage.	July 20/67	9,200,000					

FLESHERTON



LEGEND

BB-30·2 – STREAM SAMPLING POINT SHOWING MILEAGE

BB-30·99 D – OUTFALL SHOWING STREAM AND MILEAGE – TYPE OF OUTFALL

D – DITCH

P – PRIVATE

– – – – – – STORM SEWER OR DRAINAGE DITCH

ONTARIO WATER RESOURCES COMMISSION

VILLAGE OF FLESHERTON
WATER POLLUTION SURVEY
1967

SCALE : 264 0 264 528 FEET	
DRAWN BY : L. L. BROOME	DATE : AUGUST, 1967
CHECKED BY : D. C.	DRAWING No : 67 – 66